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ABSTRACT

The report investigates the pattern of interests among the 44 students at the Appalachia Educational Laboratory's Employer-Based Career Education (AEL/EBCE) program during the fall, winter, and spring of the 1972-73 program year as measured by the Kuder Occupational Interest Survey (KOIS). Group One students (those matriculating in September 1972) took the test on all three occasions; Group Two students (those matriculating in January 1973) took it on only the latter two occasions. Thirteen significant correlations were found, indicating that the number of significant occupational and college major interests of the first group of male students (17 students) was rather stable. These correlations show that students with higher numbers of interests retained higher numbers of interests. The number of occupational interests of the second group of females (13 students) was stable. Verification scores were stable, except for the second group of 10 male students. No significant differences were found in the number of significant interests in occupations or college majors for males or females in either the first or second groups between any two occasions. An appendix provides lists of scales on the KOIS arranged according to female norms, male norms, and specific college major interests. (Author/JR)

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Employer-Based Career Education

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LACHIA EDUCATIONAL LABORATORY, INC.
Charleston, West Virginia 25325

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Cover picture: Sam Burge, an EBCE student learns the fundamentals of operating a television camera at WMUL-TV in Nitro, West Virginia

Employer-Based Career Education

An Investigation of Students' Scores on the Kuder Occupational Interest Survey as an Indicator of Program Outcomes

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TECHNICAL REPORT NO. 40

RESEARCH AND EVALUATION DIVISION
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Preface

This report is one of a series completed as part of the evaluation of the Employer-Based Career Education (EBCE) program during the 1972-73 academic year. The focus of this report is an investigation of the pattern of student interests at different times during the program year. Do students' expressed career interests change in number as they explore several careers in which they were originally interested? The evaluators found few significant changes in the number of interests.

The report was written and the data were analyzed by Dr. Ermel Stepp, Evaluation Specialist with the Appalachia Educational Laboratory, Inc. The EBCE evaluation was conducted and supervised by Dr. James H. Sanders, Evaluation Specialist with the Laboratory, and under the general direction of Dr. Charles L. Bertram, Director of Research and Evaluation for the Laboratory.

Critical reviews of early drafts of the report were provided by Mr. Charles G. Herger, Associate Educational Development Specialist for the EBCE program, in order to obtain technical advice and insure that interpretations of outcomes were compatible with observed student behavior.

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Introduction

Under contract with the National Institute of Education, the Appalachia Educational Laboratory, Inc. (AEL) is developing an alternative program to traditional options available to the contemporary high school student. The alternative program under development integrates experiences with employers with information processing to achieve a potentially effective learning system for some students.

This Employer-Based Career Education (EBCE) program may have an effect on the interests of the students. This study is on the interests of EBCE students in the EBCE program which was conducted by AEL with the cooperation of the Kanawha County Schools in Charleston, West Virginia, during the academic year 1972-1973. The principal hypothetical issue raised was: the EBCE experience would not change the numbers of significant interests of the students.

Design

A basic pre-post design was used in a naturalistic situation without a control group and at a naive, exploratory level.

Treatment Groups

The treatment groups were two self-selecting classes of EBCE students. The first class, identified as Group I in this report, was composed of 17 males and 4 females, and they completed a full year from fall through spring. The second group, identified as Group II, was constituted by 10 boys and 13 girls, and they completed only the second semester.

Instrumentation

The Kuder Occupational Interest Survey was chosen and administered to the two groups. Three occasions of administration were in the fall (F),

winter (W), and spring (S). Group I responded to the Kuder on each occasion, and Group II responded to the Kuder only on the winter and spring occasions. The occasions were the beginning and ending of semesters.

The Kuder has scales on occupations and college majors with both male and female norms (Appendix). Thirty-seven occupational scales and 19 college majors are included with female norms. Seventy-seven occupational scales and 29 college majors are included with male norms. The computerized printout of Cleman's lambda correlation scores for each student on a given occupation or college major represents the resemblance of the subject's pattern of interest with a criterion group for such occupation or college major.[1] Printouts were given for girls on male norms, but not for boys on female norms. Significant interests are designated as those occupations and college majors for which the Cleman's lambda correlation was within .07 of the highest correlation on that particular scale.

Analysis

Multiple t-tests were made to determine the difference in means between occasions for boys and girls separately within the same group on the number of significantly similar occupations or college majors and, also, on the verification scores. This constitutes an *a priori* comparison of repeated measures on a single group.[2]

Results

The results of the analysis are reported subsequently for male and female performances.

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[1] G. Frederick Kuder. Kuder Occupational Interest Survey (DD) General Manual. (Chicago: Science Research Associates, 1971), p. 21.

[2] Henry E. Garrett and R. S. Woodworth. Statistics in Psychology and Education. (New York: Longmans, Green and Co., 1958), pp. 226-228.

Male Performance

The significant number of males' interests on occupational scales and college majors are represented in Tables 1 and 2, respectively, which gives means and standard deviations. Differences in the means on occupational interests and college majors are analyzed in Table 3. The t-tests for the males in the first group show no significant differences in means. An increase in mean occupational interests is evident. Significant correlations in the number of expressed interests occurred in the first group on occupations and college majors. This represents stable size of interest set, not interests themselves.

Table 1

Means and Standard Deviations of the Number of Occupational Interests, Male Students (Male Norms)

Group	Occasion	Mean	Standard Deviations
I	F	9.3529	6.0092
	W	12.3529	8.7038
	S	12.6470	8.1163
II	W	15.6000	8.8566
	S	18.0000	9.9699

Table 2

Means and Standard Deviations of the Number of College Major Interests, Male Students (Male Norms)

Group	Occasion	Mean	Standard Deviations
I	F	5.7058	4.3218
	W	6.1176	4.5617
	S	5.8823	3.9835
II	W	7.0000	3.4058
	S	7.0000	2.6076

Table 3

Intercorrelations and t-Tests of Differences in Means on Occupational Interests (Male Norms) and College Majors (Male Norms) for Male Students

Group	Scale	Occasions	r	t
I	Occupational (M)	F-W	.5666*	1.3640
		F-S	.2606	1.4374
		W-S	.8227**	.1326
II		W-S	-.2910	.5319
I	College Majors (M)	F-W	.8401**	.3546
		F-S	.8077**	.1601
		W-S	.9071**	.2158
II		W-S	.0675	.0000

*$p<.05$
**$p<.01$

Female Performance

The number of interests of the EBCE females were analyzed in a similar fashion for occupations and college majors.

Occupational Interests. Means and standard deviations of the number of interests for EBCE females on occupational scales with female norms and male norms are given in Tables 4 and 5. Differences in means on occupational interests are given in Table 6. A t-test of the means for the fall and spring occasions shows no significant differences. However, the second group had a significant correlation of numbers of significant interests on the first and second occasions for occupations. Therefore, the same students in Group II tended to have a greater number of interests when they entered and when they completed the EBCE program.

Table 4

Means and Standard Deviations of the Number of Occupational Interests, Female Students (Female Norms)

Group	Occasion	Mean	Standard Deviations
I	F	10.5000	4.3874
	W	11.7500	4.7631
	S	8.2500	4.3229
II	W	11.6153	5.9165
	S	9.9230	4.5986

Table 5

Means and Standard Deviations of Number of Occupational Interests, Female Students (Male Norms)

Group	Occasion	Mean	Standard Deviations
I	F	4.5000	1.5000
	W	4.0000	2.1213
	S	6.5000	3.9051
II	W	6.6923	4.0073
	S	7.4615	2.8986

Table 6

Intercorrelations and t-Tests Differences in Means on Occupational Scales for Female Students

Group	Scale	Occasions	r	t
I	Occupational (F)	F-W	.6280	.4657
		F-S	.4415	.8276
		W-S	-.3733	.9994
II		W-S	.8018*	1.0412
I	Occupational (M)	F-W	.5499	.4476
		F-S	.2987	1.0079
		W-S	.9355	.2886
II		W-S	.3102	.6072

*p<.01

College Major Interests. The number of interests of EBCE females in college majors are represented by the means and standard deviations on female and male norms in Tables 7 and 8, respectively. Differences in means of interests in college majors for EBCE females are given in Table 9. The females showed no significant differences in interests.

Table 7

Means and Standard Deviations of the Number of College Majors, Female Students (Female Norms)

Group	Occasion	Mean	Standard Deviations
I	F	5.5000	3.2015
	W	7.0000	4.3011
	S	6.7500	3.2691
II	W	5.8461	2.8781
	S	6.9230	3.0999

Table 8

Means and Standard Deviations of the Number of College Majors, Female Students (Male Norms)

Group	Occasion	Mean	Standard Deviations
I	F	4.0000	2.1213
	W	5.0000	3.0000
	S	2.2500	2.2776
II	W	2.5384	1.2779
	S	2.9230	2.2347

Table 9

Intercorrelations and t-Tests of Differences in Means on College Major Scales for Female Students

Croup	Scale	Occasions	r	t
I	College Majors (F)	F-W	.7443	.6975
		F-S	.6090	.6551
		W-S	.6400	.1112
II		W-S	.0331	.9256
I	College Majors (M)	F-W	.9114	.7207
		F-S	.6726	1.2686
		W-S	.3713	1.6113
II		W-S	.1761	.5604

Verification Scores and Intercorrelations

The means and standard deviations of the verification scores, which are derived measures of the sincerity and reliability of subjects' responses, for males and females on each occasion are presented in Table 10. No significant differences in verification means were noted. However, correlations of verification scores were significant between all occasions except for the second group of male students (see Table 11).

Table 1

Means and Standard Deviations for Verification Scores on All Occasions for Male and Female Students

Group	Occasions	Mean	Standard Deviations
Male			
I	F	50.9411	3.9477
	W	50.3529	4.1151
	S	51.0588	2.9199
II	W	50.9000	2.3000
	S	51.3000	4.0012
Female			
I	F	49.5000	2.6925
	W	50.2500	3.5707
	S	49.5000	3.9051
II	W	49.6154	3.2942
	S	50.7692	3.1660

Table 11

Intercorrelations and t-Tests of Differences in Means of Verification Scores

Group	Occasions	r	t
	Male Students		
I	F-W	.6385**	.5153
	F-S	.8077**	.1177
	W-S	.7913**	.1215
II	W-S	.1553	.2837
	Female Students		
I	F-W	.8580**	.1458
	F-S	.9034**	.0000
	W-S	.9860**	.3973
II	W-S	.5815*	1.0810

*p<.05
**p<.01

Summary and Conclusions

Thirteen significant correlations have been found indicating that the number of significant occupational and college major interests of the first group of male students was rather stable. These correlations show that students with higher numbers of interests retained higher numbers of interests. The number of occupational interests of the second group of females was stable. Verification scores were stable, except for the second group of male students. No significant differences were found in the number of significant interests in occupations or college majors for males or females in either the first or second groups between any two occasions.

A greater number of questions was raised by this study than answers provided. The following questions may be addressed in the future:

1. What is the stability of interests compared to normed retest figures?
2. Was there increase in experimental scores 5 & 6 for male, 7 & 8 for female?
3. What percent of measured interests were explored by students? Is there any noticeable effect on retest (i.e., increase in Cleman's lambda correlations)?
4. Of the interests not noted on initial testing but appearing subsequently, how many were viewed by students, i.e., did employer site experiences generate any new interests?
5. What changes occurred in Cleman's lambda correlations? (1) for stable interests, (2) for midyear emergence, (3) inter-interest numeric relationships?

6. What relationships exist between numbers of interests on the various scales and other measures, e.g., achievement?[1]

[1] William W. Cooley and Paul R. Lohnes. Multivariate Data Analysis. (New York: John Wiley and Sons, Inc., 1971), pp. 205-216.

Appendix

List of Scales on the Kuder Interest Survey According to Female Norms, Male Norms, and Specific College Major Interests

Scales of the Kuder Interest Survey

OCCUPATIONAL SCALES FEMALE NORMS		COLLEGE MAJOR SCALES, FEMALE
Accountant	Nurse	Art & Art Education
Bank Clerk	Nutritionist	Biological Sciences
Beautician	Occupational Therapist	Business Education and Commerce
Bookkeeper	Office Clerk	Drama
Bookstore Manager	Physical Therapist	Elementary Education
Computer Programmer	Primary School Teacher	English
Counselor, High School	Psychologist	Foreign Languages
Dean of Women	Psychologist, Clinical	General Social Sciences
Dental Assistant	Religious Education Director	Health Professions
Department Store Saleswoman	Science Teacher, High School	History
Dietitian, Administrative	Secretary	Home Economics Education
Dietitian, Public School	Social Caseworker	Mathematics
Florist	Social Worker, Group	Music and Music Education
Home Demonstration Agent	Social Worker, Medical	Nursing
Home Economics Teacher, College	Social Worker, Psychiatric	Physical Education
Interior Decorator	Social Worker, School	Political Science
Lawyer	Stenographer	Psychology
Librarian	X-Ray Technician	Sociology
Math Teacher, High School		Teaching Sister, Catholic

Scales of the Kuder Interest Survey

OCCUPATIONAL SCALES MALE NORMS		Optometrist	Psychology Professor
Accountant, Certified Public	Engineer, Electrical	Osteopath	Radio Station Manager
Architect	Engineer, Heating/ Air Conditioning	Painter, House	Real Estate Agent
Automobile Mechanic	Engineer, Industrial	Pediatrician	Sales Engineering, Heating, Air Conditioning
Automobile Salesman	Engineer, Mechanical	Personnel Manager	Science Teacher, High School
Banker	Engineer, Mining and Metal	Pharmaceutical Salesman	School Superintendent
Bookkeeper	Farmer	Pharmacist	Social Caseworker
Bookstore Manager	Florist	Photographer	Social Worker, Group
Bricklayer	Forester	Physical Therapist	Social Worker, Psychiatric
Building Contractor	Insurance Agent	Physician	Statistician
Buyer	Interior Decorator	Plumber	Supervisor/Foreman, Industrial
Carpenter	Journalist	Plumbing Contractor	Travel Agent
Chemist	Lawyer	Podiatrist	Truck Driver
Clothier, Retail	Librarian	Policeman	Television Repairman
Computer Programmer	Machinist	Postal Clerk	University Pastor
Counselor, High School	Mathematician	Printer	Veterinarian
County Agricultural Agent	Math Teacher, High School	Psychiatrist	Welder
Dentist	Meteorologist	Psychologist, Clinical	X-Ray Technician
Electrician	Minister	Psychologist, Counseling	YMCA Secretary
Engineer, Civil	Nurseryman	Psychologist, Industrial	

Scales of the Kuder Interest Survey

COLLEGE MAJOR SCALES MALE NORMS	
Agriculture	Foreign Languages
Animal Husbandry	Forestry
Architecture	History
Art and Art Education	Law (Graduate School)
Biological Sciences	Mathematics
Business Accounting and Finance	Music and Music Education
Business and Marketing	Physical Education
Business Management	Physical Sciences
Economics	Political Science and Government
Elementary Education	Premed, Pharmacy and Dentistry
Engineering, Chemical	Psychology
Engineering, Civil	Sociology
Engineering, Electrical	U.S. Air Force Cadet
Engineering, Mechanical	U.S. Military Cadet
English	

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